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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/656,585

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Chia-Che Chuang

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01/23/2006

TUNG & ASSOCIATES

Suite 120

838 W. Long Lake Road

Bloomfield Hills, MI 48302

EXAMINER

NGUYEN, THANH T

ART UNIT

PAPER NUMBER

2813

DATE MAILED: 01/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/656,585	CHUANG ET AL.	
	Examiner	Art Unit	
	Thanh T. Nguyen	2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-6 and 21-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 31-34 is/are allowed.
- 6) ☒ Claim(s) 1,2,4-6 and 21-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 4-6, 21-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berman (U.S. Patent No. 6,273,798) in view of Anderson (U.S. Patent Publication No. 2004/0259477).

Referring to figures 2a-4, Berman teaches a built-in pre-conditioning apparatus for pre-conditioning a polishing substrate to achieve a desired operating temperature, comprising:

A pre-conditioning arm (114/240, fig. 3a-3b, col. 8, lines 6+) pivotally mounted adjacent a substrate, the substrate for polishing a semiconductor production wafer surface comprising a first material (130/228 fig. 2a-3b, col. 7, lines 33-35); and

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An ingot (130/228, called preconditioning film, see col. 7, lines 33-35) comprising the first material, the ingot removeably carried by the pre-conditioning arm for engaging and pre-conditioning the substrate (see col. 7, lines 33-48, figures 2a-3b); and,

mechanism operably engaging the pre-conditioning arm for selectively moving the ingot into and out of contact with the substrate at a selected contact pressure (see figures 2-3b, col. 7, lines 5-22).

Regarding to claim 2, wherein the ingot comprises consists essentially of a material selected from the group consisting of copper, silicon dioxide and tantalum (130/228 fig. 2a-3b, col. 7, lines 33-35).

Regarding to claim 4, wherein the ingot consists essentially of the first material, the first material selected from the group consisting of copper, silicon dioxide and tantalum(130/228 fig. 2a-3b, col. 7, lines 33-35).

Regarding to claim 5, wherein the pre-conditioning arm comprises a support (138) and an ingot mount head (130) carried by the support, and wherein the ingot is carried by the ingot mount head (130, see fig. 2b-3b).

Regarding to claim 6, wherein the ingot comprises consists essentially of a material selected from the group consisting of copper, silicon dioxide and tantalum (130/228 fig. 2a-3b, col. 7, lines 33-35).

Regarding to claim 23, the substrate is a polishing pad (112).

Regarding to claim 24, the ingot (130/228) is fixedly mounted on the pre-conditioning arm (114/240), the preconditioning arm pivotable for sweeping the ingot across the substrate surface (112/212, fig. 2a-3b, col. 7, lines 5+) .

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Regarding to claim 25, a conditioning arm (214) comprising a conditioning head (215), the conditioning arm (214) pivotally mounted adjacent the substrate for conditioning the substrate (212, see fig. 3a-3b).

Regarding to claim 26, a pre-conditioning apparatus for preconditioning a polishing pad to achieve a desired polishing pad temperature for a semiconductor wafer polishing operation, comprising:

A pre-conditioning arm (114/240) mounted adjacent a polishing pad (112/212),

An ingot consisting essentially of a first material(130/228 fig. 2a-3b, col. 7, lines 33-35), the ingot removable mounted on the pre-conditioning arm (114/240) for engaging and pre-conditioning the polishing pad(112/212), the pre-conditioning arm pivotable for sweeping the ingot across the polishing pad(112/212, fig. 2a-3b, col. 7, lines 5+); and

Regarding to claim 29, the first material selected form the group consisting of copper, silicon dioxide and tantalum (130/228 fig. 2a-3b, col. 7, lines 33-35).

Regarding to claim 30, a conditioning arm (214) comprising a conditioning head (215), the conditioning arm (214) pivotally mounted adjacent the polishing pad for conditioning the polishing pad (112/212, see fig. 3a-3b).

Berman teaches in figures 2a-3b, col. 7, lines 5-22 using appropriate mechanism to rotate pre-conditioning arm 114 and head section 136, but does not specially teach that such mechanism is known in the art as actuator/actuation, as well as the specific contact pressure, and the thickness of the ingot. However, Anderson teaches at figures 1, 3, an actuator (119, figures 1, paragraph# 25) to control the pre-conditioning arm.

Therefore, it would have been obvious to a person of ordinary skill in the requisite art at the time of the invention was made would teaches the actuator in process of Berman as taught by Anderson because the actuator would control the pre-conditioning arm.

It would have been obvious to a person of ordinary skill in the requisite art at the time of the invention was made to optimize the thickness of the ingot and the contact pressure, since it has been held that where the general conditions of a claim are disclosed in the prior art (i.e.- ingot, polishing), discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233 (CCPA 1955).

The specification contains no disclosure of either the critical nature of the claimed arrangement (i.e.- wherein the ingot has a thickness of about 1-10cm, the contact pressure is about 4-5psi) or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen limitations or upon another variable recited in a claim, the applicant must show that the chosen limitations are critical. In re Woodruff, 919 F.2d 1575, 1578 (FED. Cir. 1990).

Therefore, it would have been obvious to a person of ordinary skill in the requisite art at the time of the invention was made would provide a specific contact pressure, and the thickness of the ingot in process of Berman because choosing an optimum pressure and thickness is only involve in routine skill in the art to form uniform film in an improve CMP device.

Allowable Subject Matter

Claims 31-34 are allowed because none of the prior art alone or in combination teaches or suggests the particular subset of the polishing apparatus for conditioning and preconditioning

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a polishing pad comprising an ingot consisting essentially of a first material the ingot removeably and fixedly mounted on the pre-conditioning arm for engaging and pre-conditioning the polishing pad, the pre-conditioning arm pivotable for sweeping the ingot across the polishing pad, the ingot for raising a temperature of the polishing pad to a desired operating temperature within a desired time period for polishing a semiconductor production wafer surface comprising the first material, wherein an actuation mechanism operable engages the pre-conditioning arm for selectively moving the ingot into and out of contact with the polishing pad at a selected contact pressure.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Nguyen whose telephone number is (571) 272-1695, or by Email via address Thanh.Nguyen@uspto.gov. The examiner can normally be reached on Monday-Thursday from 6:00AM to 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, can be reached on (571) 272-1702. The fax phone number for this Group is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956 (See **MPEP 203.08**).

A handwritten signature in black ink, appearing to read 'Thanh', with a stylized flourish extending from the end.

Thanh Nguyen
Patent Examiner
Patent Examining Group 2800

TTN